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ABSTRACT

A survey of office workers employed by North Carolina telephone companies was conducted to determine the extent and types of health problems experienced by office workers who use video display terminals (VDTs). Data were gathered by questionnaires mailed to 2,478 office workers, with 966 responses. Questions concerning a wide range of health effects and working conditions were asked. Ninety-five percent of the respondents were women, most aged 20-40 years. Some of the results of the survey were as follows: (1) VDT users who use a VDT for more than half of their work day experienced significantly higher rates of health problems than non-VDT users, including increased rates of eyestrain; back, neck, arm, and hand pain; stress-related problems; and chronic health problems--hypertension and angina; (2) poor workstation design factors, including lack of adjustable controls for VDT screen angle, brightness, glare, and chairs providing inadequate back support, were associated with increased rates of health problems for both VDT and non-VDT office workers; (3) these health problems were further aggravated by jobs that involved low job control and/or high job demands; and (4) there was a significant relationship between angina and VDT use. Recommendations were made for improvements in the following areas: VDT and workstation design; workplace design; stress reduction; training; research; and government action. The survey instrument is included. (KC)

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North Carolina CWA/NCOSH

OFFICE WORKERS

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STRESS SURVEY RESULTS

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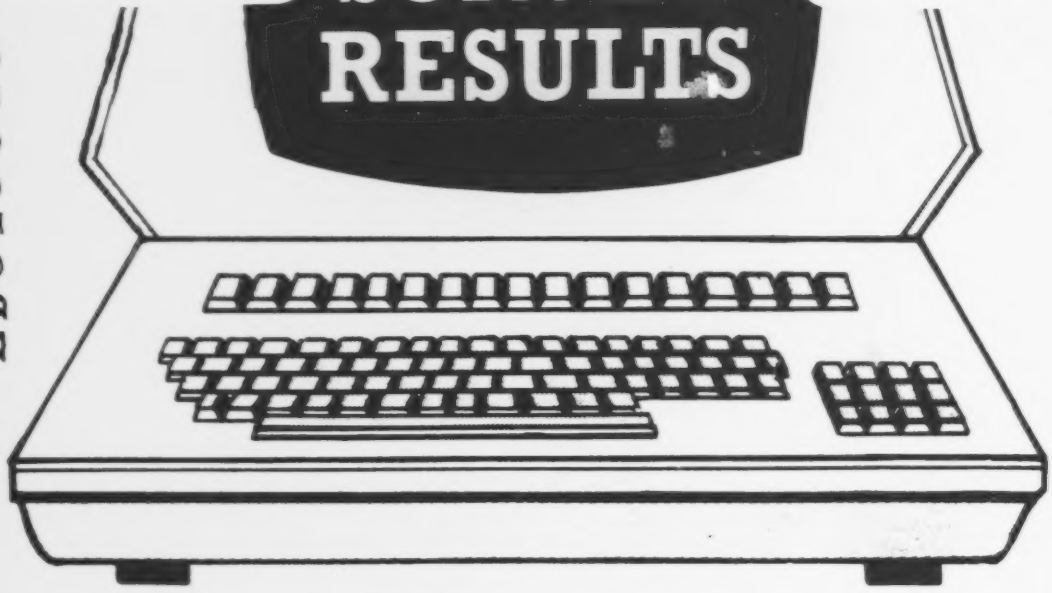

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N.C. Occupational Safety & Health Project
N.C. Communications Workers of America
March, 1985

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Many people dedicated time and effort to ensure the successful outcome of this important project. While all the names are too numerous to list, the NCOSH volunteers and CWA members who prepared mailings, logged, coded, and telephoned are greatly appreciated. Special mention goes to the NCOSH staff, David Austin and Susan Lupton and NCOSH Board for their commitment to this project; the NCWA Women's Network; School of Public Health, Departments of Epidemiology and Health Education, University of North Carolina at Chapel Hill; David LeGrande, National CWA Health and Safety Representative; and Kathy Zaumseil for their contribution to this project. And thanks to all the CWA members who invested their time to complete the survey.

Project Coordinator — Tobi Lippin, NCOSH

Survey Design and Analysis — Suzanne Haynes, Ph.D., Andrea La Croix, Ph.D., Patricia Paddock, M.P.H., Christine Branche, B.A., and Brenda Kurz, M.S.W.

CWA Team Leaders — Cindi Weeks #3611, Barbara Sharpe and Jennie Sherrill #3603, Jean Walden #3680, Marjorie Baldwin #3650, Brenda Pyatt #3607, Shirley Moore #3615, and Heidi Newber #3601.

Typesetting (on a VDT) by Joe Pfister, Southern Types, Durham, N.C.

Additional copies of this report are available pre-paid from N.C. Occupational Safety and Health Project. $5.50 NCOSH member, $7.50 all others.

NCOSH
P.O. Box 2514
Durham, NC 27705
919-286-9249

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PART I

SUMMARY

N.C. Occupational Safety and Health Project and Communications Workers of America

N.C. OFFICE WORKER STRESS SURVEY

The N.C. Occupational Safety and Health Project (NCOSH) and seven locals of the Communications Workers of America (CWA) from throughout North Carolina conducted a survey of office workers employed by Southern Bell and other N.C. telephone companies. A self-reporting questionnaire was used to determine the extent and types of health problems experienced by telephone company office workers. The results of this survey concur with those found in other studies, with one notable new finding about the relationship between video display terminal (VDT) use and angina (chest pain). In summary, these results include:

• VDT users (workers who use a VDT for more than half of their work day) experienced significantly higher rates of health problems than non-VDT users (workers who either do not use a VDT, or use one for less than half of their work day). Increased rates of the following health problems were reported:

- ★ **eyestrain**
- ★ **musculoskeletal (back and neck strain, and arm and hand pain);**
- ★ **stress-related health problems (headaches, nausea, tension, insomnia and fatigue); and**
- ★ **chronic health problems [hypertension (high blood pressure), and angina (chest pain)].**

• Poor workstation design factors including lack of adjustable controls for VDT screen angle, brightness and glare; and chairs providing inadequate back support were associated with increased rates of health problems for both VDT and non-VDT office workers.

• These health problems were further aggravated by jobs that involved low job control (lack of decision-making, excessive supervision or monitoring, and dealing with the public) and/or high job demands (meeting strict deadlines, working at a fast pace, and paying close attention to details) for VDT and non-VDT users. VDT users' jobs were more often characterized by low control and high demands than non-VDT users. This may be significant in results showing that VDT users experienced the highest rates of eyestrain, tension and angina.

• There was a significant relationship between angina (a first sign of heart disease) and VDT use. This study is the first to document a relationhsip between VDT use and a long-term chronic health problem. This finding underscores the critical need for more research into the long term health effects of VDT use.

The technology exists to modify VDT and workstation design (adjustable features on VDTs and chairs providing adequate back support) and work organization factors (diversifying work tasks, eliminating excessive monitoring and work pacing). Changes in these factors can reduce the rates of health problems for telephone office workers. NCOSH and CWA recommend action to improve working conditions for office workers. These include actions in the following areas:

- ★ **VDT and workstation design** (adjustable controls on VDTs; appropriate chair; routine VDT maintenance; annual eye exam, and frequent rest breaks for VDT users)
- ★ **Workplace design** (proper lighting, and ventilation; and the elimination of overcrowding)
- ★ **Stress reduction** (redesign of VDT jobs to include non-VDT tasks; more worker flexibility in providing quality service and less emphasis on quantity)
- ★ **Training** (joint labor-management health and safety training for office workers)
- ★ **Research** (joint labor-management research into health problems of office workers particularly of chronic long term problems such as angina)
- ★ **Government action** (advocating additional research and the establishment of minimum standards for safe use)

CWA members have made a significant contribution to the health and safety of N.C.'s office workers by their extensive efforts to study these problems and advocate for improvements.

Copies of the report are available pre-paid from NCOSH $5.50 NCOSH members, $7.50 all others.

N.C. Occupational Safety and Health Project
NCOSH
Durham, NC 27705
(919) 286-9249

PART II

INTRODUCTION

Identifying the Problem

Rapid advances in computer technology have revolutionized the business world. The widespread use of video display terminals (VDTs) has transformed today's office environment. In part, this new technology has helped increase productivity and profits. However, only recently have some other unanticipated, and negative, health effects of the computerized office been identified.

The U.S. Department of Labor reports that clerical employment is now the largest single category of work in the U.S., accounting for nearly one in five of all employed workers. In North Carolina, 34% of all women workers are employed in administrative/support occupations. The nature of clerical employment has been greatly transformed durng the past decade with the introduction and widespread use of computer-based office technology. The video display terminal, also known as the cathode ray tube (CRT), a television-like screen which displays information that can be entered or retrieved by users, is now used in thousands of offices and businesses all over the country. In 1982 it was estimated that there were seven to ten million VDTs in use in this country. This number was expected to have doubled by 1985, and to reach 40 million by 1990.

Well acclaimed are the machine's advantages of eliminating paper work, increasing productivity and speeding up office work. Yet, little consideration has been given to operators' safety, comfort and well-being, and the effects on human health are still relatively unknown or ignored.

Despite insistent and increasing reports of unsatisfactory workplace conditions and health problems experienced by VDT operators, few studies have been conducted on the effects of VDT use on workers' health. Without documented long-term research data to substantiate their claims, workers will have little opportunity to pressure industry, government, or VDT manufacturers for needed changes. The few studies which have been undertaken in the U.S., Canada, and Europe have identified eyestrain and visual impairment, musculoskeletal strains, stress symptoms, and possibly, reproductive disorders as the primary health problems associated with VDT use.

Visual problems are most frequently reported by VDT operators. Such complaints include eye discomfort, eyestrain, burning, itching, and irritation, aching. Other less frequent visual symptoms include blurred vision, double vision, color fringes, and reported deterioration of visual acuity. Also, many workers report headaches. The rate of visual complaints depends on the type of VDT work (data input, data output, and type of interaction) and the particular visual demand associated with the work and the work environment. Numerous studies have

shown that different types of visual discomfort may produce varied effects. Health effects related to visual performance (blurred vision) may have a short recovery period of 15-20 minutes. However, severe optical discomforts (eye irritation, soreness, and tiredness) may linger after work and even be present at the start of the next day's shift.

Musculoskeletal problems are associated with VDT jobs requiring constrained working positions for an entire work shift. VDT operator complaints are most often related to the neck, shoulders, back and wrists. Complaints mentioned less often involve the arms, hands, and legs. In a seated position, the VDT operator is subject to continuous stress on almost all postural muscles. The amount of the stress is dependent upon the position of various parts of the operator's body. Holding the head to the side or forward may lead to neck and shoulder fatigue and pain. Other neck and shoulder complaints result from the use or position of the operator's arms. For example, elevation of the arms will add to neck and shoulder strain. Prolonged, constrained postures required by the job will make this condition worse. Over the long term, continued wear and tear may result in a gradual deterioration of joint tissues.

Occupational stress is rapidly becoming recognized as one of the most serious and widespread health hazards common to all workplaces. Job stress is a major cause of physical and emotional health problems. A study conducted by the National Institute of Occupational Safety and Health (NIOSH) found that VDT clerical workers suffered more symptoms of stress than any other groups studied. Headaches, backaches, nausea, dizziness, insomnia, tension, anxiety, irritability, fatigue, and digestive problems are all examples of health effects related to stress. Chronic health problems associated with stress include coronary heart disease, ulcers, and migraine headaches.

All of these stress-related health symptoms have been associated with poor VDT workstation design (VDTs, chairs, tables, document holders, lighting, foot rests and arm and wrist rests), work environment design (lighting,ventilation, temperature, humidity, and noise), and work organization design (the type and nature of a given task, work pace, workload, amount of control over the way the job is performed, monitoring practices, training, and supervisory style). Therefore, to optimize worker well-being and productivity, work should be designed to meet the needs and characteristics of employees rather than having workers adapt to meet the design of workplace tools and equipment.

The Problem in North Carolina

The N.C. Occupational Safety and Health Project (NCOSH) is a non-profit membership organization of labor union locals and health, technical and other professionals working to improve worker health and safety conditions in N.C. About one-third of NCOSH's labor union local members are affiliated with the Communications Workers of America (CWA), the union representing workers in the telecommunications industry. In 1982, NCOSH received an increasing number of health and stress complaints from office workers employed by telephone companies throughout the state. The health complaints included headaches, eyestrain, and backaches. Stress related complaints included anxiety, fatigue, and tension.

"I expected most of us to end up with heart-attacks or ulcers or worse!! Please help us!"

Alarmed by these complaints, NCOSH and CWA developed and implemented a statewide survey of office workers employed within the telecommunications industry. The purposes of the survey were to:

1. Identify the nature and extent of health related problems among CWA office workers in North Carolina, particularly those using VDTs.
2. Examine the relationships between reported health problems and working conditions.
3. Compare the types of problems (job design factors and health complaints) encountered in VDT operations and in general office environments in the telecommunications industry.
4. Provide documentation to aid in designing interventions and solutions to problems identified.

"You get depressed because of so much pressure, or the computer doesn't work or your ear plug hurts your ear or gives you an earache, or headache or you feel like if you don't leave soon you would die. I feel sometimes if I could only scream out loud I would feel much better."

Developing the Survey

CWA represents approximately 14,000 North Carolina workers primarily employed by Southern Bell, American Telephone and Telegraph, Western Electric and several independent phone companies. The participating CWA union locals, whose members comprised the study population, were selected based on interest and willingness to participate. Efforts were made to achieve a broad representation of telephone office workers relative to geographical location and company ownership. The following seven CWA locals participated in the study: #3611/Raleigh (Wake County), #3680/Fayetteville (Cumberland County), #3603/Charlotte (Mecklenberg County), #3615/Wilmington (New Hanover County), #3601/Asheville (Buncombe County), #3650/Greensboro and #3607/Greensboro (Guilford County).

The survey was conducted by use of a mailed self-reporting questionnaire. The survey was initiated in November, 1983 and completed in October, 1984. Distribution and collection of the survey was accomplished primarily through the efforts of CWA volunteers and the N.C. CWA Women's Activities Network, with coordination provided by NCOSH. Efforts to augment initial responses included a reminder postcard, followed by telephone interviews.

Questions concerning a wide range of health effects were included in the survey. These health effects included:

- eyestrain;
- muscle strains or pain in the neck, back, shoulders, arms, wrists or hands;
- stress-related symptoms including headaches, nausea, dizziness, insomnia, tension, anxiety, fatigue and digestive problems; and
- chronic health problems including ulcers, heart disease, hypertension (high blood pressure), and angina (chest pain).

In addition, workers' perceptions of their psychosocial working conditions and office environment were reported including:

- pacing;
- control;
- demand;
- dealing with the public;
- closeness of supervision and monitoring;
- lighting;
- air quality;
- noise; and
- spatial design.

For office workers whose jobs involved the use of VDTs, information was also collected on the:

- time spent at the terminal;
- length, frequency and control over breaks;
- control over work pacing;
- demand of work-per-hour requirements;
- screen color;
- screen glare;
- character or screen flicker; and
- adjustability of screen, keyboard, chair and table.

Questions used in this survey were derived from a variety of sources in particular the "9 to 5" (The National Association of Working Women) and the National Institute of Occupational Health (NIOSH) surveys. Analysis of the NCOSH/CWA survey data was performed by consultants from the School of Public Health, Departments of Epidemiology and Health Education, University of North Carolina at Chapel Hill.

Characteristics of the Respondents

Forty percent of the 2,478 persons surveyed responded. Of those responding, 966 were office workers. The survey analysis included only office workers.

TABLE 1

CHARACTERISTICS OF OFFICE WORKER RESPONDENTS

Sex		Race		Marital Status	
Women	95%	White	78%	Married	68%
Men	5%	Black	23%	Single	18%
		Other	2%	Divorced/ Separated or Widowed	20%

Age		Years of Employment by Current Employer		Education Level	
20-29 yrs	21%	0-5 yrs	24%	College Graduates	9%
30-39 yrs	51%	6-10 yrs	16%	Some College	34%
40-49 yrs	15%	11-15 yrs	31%	High School	54%
50-59 yrs	11%	16-20 yrs	18%	Non-High School Graduates	3%
60-65 yrs	2%	21-40 yrs	11%		

Categorizing VDT and Non-VDT Jobs

For the survey analysis, office workers were divided into two groups: VDT users and Non-VDT users. VDT users worked with a VDT for more than 50% of their work time. Non-VDT users either did not use a VDT, or used it for less than 50% of their work time.

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TABLE 2

VDT WORK STATION DESIGN AND HEALTH PROBLEMS

Ergonomic Feature	Eyestrain	Headache	Insomnia	Tension	Fatigue	Back Strain	Arm/Hand Pain	Hypertension (High Blood Pressure)	Heart Disease	Ulcer	Angina (Chest Pain)
1) Characters on screen											
Blurred	★*	★	★	★	★	★	★	★			
Too Small	★	★	★	★	★	★	★	★			★
2) Screen Flicker	★		★	★	★	★	★	★			★
3) Reflections on screen	★	★	★	★	★	★	★	★			
4) Lack of Adjustable Features											
Brightness							★				
Hood											
Screen						★	★				
Keyboard											
Anti-glare surface	★		★								
Footrest											
Armrest											
Vertically Adjustable Work Surface					★						
Window Surface											
5) No Wall Behind VDT	★	★	★	★	★	★	★		★		
6) Wearing Glasses/ Corrective Lenses	★										

*★ mark indicates significant association

PART III

SURVEY RESULTS: HEALTH*

VDT and Workstation Design

VDT workstation design factors were found to be significantly associated with visual, musculoskeletal, stress-related, and chronic health problems. Too small or blurred screen characters and reflections on the screen were associated with eyestrain, headaches, insomnia, tension, fatigue, back strain, arm and hand pain, and hypertension. Screen flicker was associated with all of the above symptoms except headaches. Too-small characters and screen flicker were also associated with angina (chest pain). Unadjustable screens were associated with back strain and arm and hand pain. Lack of vertically adjustable work surfaces were associated with fatigue. Also, lack of anti-glare surfaces were related to eyestrain and insomnia.

> **Conclusion: VDT workstation design factors were found to be significantly associated with particular visual, musculoskeletal and stress-related health problems and chronic diseases.**

Another significant finding of the study was the relationship between improper chair design and reported health symptoms. An adequate chair providing back support reduced health symptoms of both VDT and non-VDT workers. Note that for non-VDT workers an inadequate chair more than tripled the rates of back and neck strain, and more than doubled the rates of arm and hand pain, insomnia and tension.

*The health results included women officer workers only. There were too few men for statistically significant analysis.

TABLE 3

ADEQUATE CHAIRS AND THE RELATIONSHIP TO HEALTH PROBLEMS

	Adequate Chair		Inadequate Chair	
Symptom	Non-VDT	VDT	Non-VDT	VDT
Eyestrain	27%	46%	55%	66%
Headache	27%	44%	56%	60%
Insomnia	10%	19%	29%	31%
Back/Neck Strain	20%	31%	64%	57%
Arm/Hand Pain	11%	11%	29%	24%
Fatigue	34%	52%	64%	69%
Tension	22%	40%	59%	55%

Conclusion: Adequate back support provided by a chair significantly reduced the health problems reported by both VDT and Non-VDT office workers. The ergonomics of a workstation are important factors to consider in designing an office to promote worker comfort and good health.

VDT Workstation Design

Factors in the design of VDT workstations was found to be significantly associated with particular stress related health problems and chronic disease.

Conclusion: Chair providing adequate back support significantly reduced health problems reported by both VDT and non-VDT office workers. Proper chair design is essential to the reduction of musculoskeletal and stress-related health problems, and the improvement of worker comfort and health.

"How can the Company expect the operators to have the 'Voice with the Smile' and be even tempered with all the customers that we have to deal with each day? Sometimes we speak to over 800 or 900 people per day. Most are very demanding of us and we still must make a certain average work time (AWT) average."

Overall Job Related Health

The survey included questions about stress-related health symptoms including headaches, nausea, insomnia, tension, anxiety and musculoskeletal problems; as well as questions about chronic health problems and diseases such as hypertension (high blood pressure), heart disease, angina (chest pain), and ulcers. VDT users reported higher rates of health problems than non-VDT users in all areas surveyed with the exception of arm and hand pain.

> **Conclusion:** In addition to higher rates of stress-related health problems, VDT users in this survey reported a significantly higher rate of angina (chest pain), a first sign of heart disease. This is the first study to establish the relationship between VDT use and a chronic health problem.

The Effects of Job Control and Demands

In addition to the physical office environment, two factors — job demands and job control — were examined to determine their effect on worker health. Job control was evaluated by answers to the following:

> **How often do these statements describe your job? (Never, Sometimes, Often, Almost Always)**
>
> - I make decisions on my own, including how fast or slow to work.
> - Dealing with customers/clients or the public is a major source of stress on my job.
> - I have a lot of pressure or responsibility without enough authority to make decisions.
> - My job requires that I do the same thing over and over; the work is repetitious and monotonous.
> - There is too much supervision or excessive monitoring of my work.

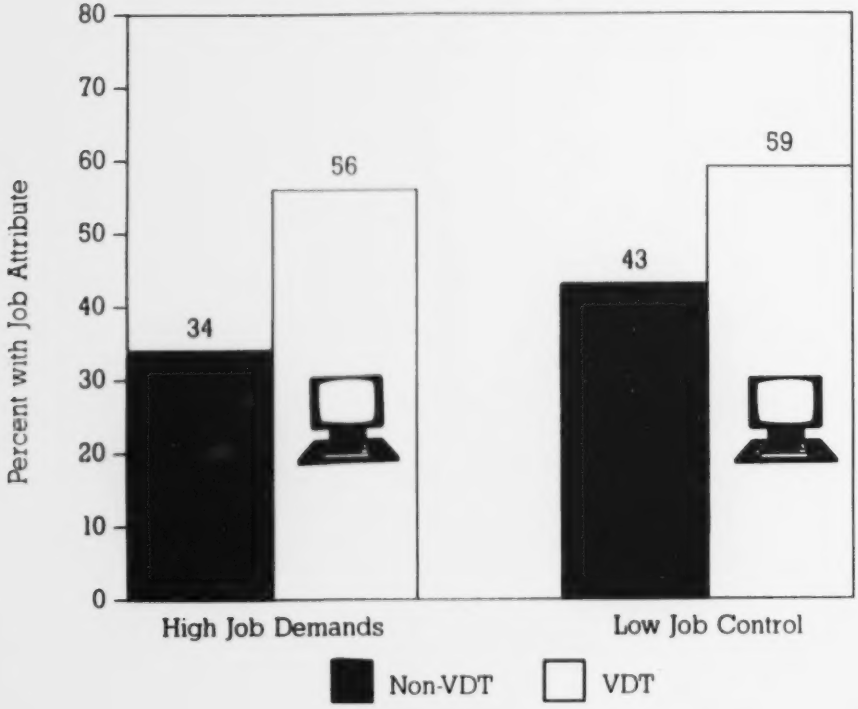
Job Demands were evaluated by answers to the following:

> **How often do these statements describe your job? (Never, Sometimes, Often, Almost Always)**
>
> - The job requires that I work very fast.
> - My work requires that I pay very close attention to details.
> - My work involves meeting deadlines and/or strict time schedules.

High job demands and low job control were associated with increased health problems for all workers. VDT users reported higher job demands and lower job control than non-VDT users. Consequently, VDT users reported higher rates of all health problems surveyed except back and neck strain and arm and hand pain.

GRAPH 1

HIGH JOB DEMANDS AND LOW JOB CONTROL
According to VDT Exposure



"We are constantly pressured to maintain our CAP (Courtesy, Accuracy, and Productivity) with customers who are not aware of the constant struggle to maintain a high AWT (Average Work Time). It takes a very special person to cope with the public's demands and needs, along with the abusiveness."

TABLE 4

HEALTH SYMPTOMS ACCORDING TO JOB CONTROL AND VDT USE

	High Control		Low Control	
Symptom	Non-VDT	VDT	Non-VDT	VDT
Eyestrain	24%	50%	49%	56%
Headache	24%	40%	51%	59%
Insomnia	15%	11%	18%	32%
Back/Neck Strain	21%	39%	52%	44%
Arm/Hand Pain	7%	8%	33%	22%
Fatigue	30%	45%	59%	68%
Tension	20%	30%	53%	58%
Angina	4%	15%	13%	16%

Also, VDT operators having low control reported the highest rate of angina of those surveyed. Of even greater concern, the highest rates of angina (18%) were reported by VDT operators between 30-39 years old. This compares to 4% of non-VDT users who reported symptoms of angina and a general (non-study) population rate of only 3-4%.

Conclusion: The characteristics of high demand and low control combined with intense VDT use resulted in the highest rate of health problems. The relationship of angina with VDT use mandates further, more definitive research.

Pregnancy

Several questions about pregnancy and pregnancy outcomes were asked. No significant problems were detected among the survey respondents. However, clusters of miscarriages and birth defects have been reported in numerous locations in the U.S. and other countries.

Conclusion: Among the survey's respondents, no pregnancy related problems were evident. However, with reports of birth defects and miscarriages among VDT users in the U.S., Canada and Europe and no causative factors conclusively identified, more research regarding potential reproductive hazards is needed.

PART IV

SURVEY RESULTS: OFFICE ENVIRONMENT*

Air Quality

Dissatisfaction with workplace air quality was reported by 62% of the study participants. Of those workers reporting that the amount of fresh air was unsatisfactory, 57% reported the air was drafty and 54% too stagnant. Significantly, 60% said the air contained fumes with 41% reporting smoke. Many reported poor air circulation and inadequate ventilation as the source of these problems. Others indicated that over-crowding, dirty and dusty offices and poorly functioning air conditioning and heating systems were to blame.

> **Conclusion: A majority of respondents said that the office environment was uncomfortable due to poor air quality.**

Noise

Noise levels were reported as uncomfortble by 62% of those office workers who responded. Too noisy offices serve to increase stress related health symptoms.

> **Conclusion: Excessive noise levels in the office were reported as uncomfortable by a majority of respondents.**

*The Office Environment results included both women and men workers.

PART V

RECOMMENDATIONS

This survey documents that office worker health is influenced by work environment design, work organization factors, and VDT use. The technology exists to modify these factors to reduce the rates of health symptoms and chronic health problems such as angina. Corporate management and governmental entitities must recognize the seriousness of office worker health problems and, in turn, make implementation of necessary changes to reduce these problems a priority. These recommendations highlight the CWA/NCOSH survey results; however, findings from other studies were included to make these recommendations comprehensive.

VDT and Workstation Design

★1. Adjustable chairs with adequate back support, adjustable table height with adequate workspace, document holders, foot rests, and wrist and arm rests should be provided to all office workers. The option to stand or stretch at the workstation should be available to all workers.

★2. VDTs should be equipped with detachable or separate keyboards and, where needed, anti-glare filters. In addition, VDTs should have adjustable contrast, brightness, and screen angle controls. Screens should have a non-glare matte-finish.

3. Adjustable and updated headsets with volume controls should be provided to all employees using this equipment.

4. An annual VDT maintenance program should be instituted.

5. VDTs should be examined bi-annually for radiation emissions, with a union representative present and informed of the results. Protective shielding of electrical components should be provided.

★6. VDT users should be provided magnifying lenses or special glasses on request.

★7. VDT users should be provided eye examinations at the company's expense upon beginning VDT use and annually thereafter.

8. Pregnant VDT operators should be allowed the opportunity to transfer to non-VDT work during the term of their pregnancy without loss of contractual benefits.

★9. VDT operators should be provided with frequent, short rest breaks. Where this is not possible, rest breaks of 10 minutes per hour should be provided.

Workplace Design

★1. VDT workstations should be designed to minimize glare, including appropriate lighting and properly covered windows.

★Offices should be redesigned to avoid problems of overcrowding and congestion with particular attention to adequate ventilation systems, temperature, humidity and noise control.

★ Recommendations highlighting NCOSH/CWA survey results.

Stress

★1. Jobs requiring constant VDT use should be redesigned to allow workers to perform non-VDT work for part of their work day.

★2. Quality rather than quantity of service should be emphasized. Therefore, current average worktime objectives and monitoring should be reviewed by representatives from labor and management. Workers should be allowed more flexibility in providing quality service.

★3. VDT users should have the opportunity to have meaningful input into how work is designed. This should include workload, work pace, monitoring practices and supervisor attitudes and practices. This input will help in humanizing work tasks.

★4. Quiet areas or rooms should be provided at all work locations.

Training

★1. Office worker health and safety training programs should be provided annually on company time. These programs should be developed and presented jointly by labor and management representatives. The content should include proper use of VDTs and information about other equipment, and other ergonomic factors (workstation, work environment and work organization)

★2. Management training should be developed that includes supervision attitudes and practices to humanize the work environment.

Research

★1. Joint labor and management research should be initiated to further examine health effects specific to office work. This should include visual, musculoskeletal, and job stress-related symptoms. Special emphasis should be placed on long term chronic health diseases, particularly angina and heart disease. In addition, further research regarding potential VDT radiation emissions and negative reproductive outcomes should be conducted.

Government Action

★1. The N.C. General Assembly and the N.C. Department of Labor should advocate additional scientific research and the development and adoption of minimum standards for safe and healthful VDT use.

For Office Use Only

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PART VI

SURVEY

NORTH CAROLINA CWA/NCOSH
OFFICE WORKERS STRESS SURVEY

Please check ✓ the appropriate box

I. JOB SKILLS AND RESPONSIBILITIES

1. How often do these statements describe your job?

	Never 1	Some times 2	Often 3	Almost Always 4	For Office Use Only
a. The job requires that I work very fast					5
b. My work requires that I pay very close attention to details					6
c. My work involves meeting deadlines and/or strict time schedules					7
d. I make decisions on my own, including how fast or slow to do my work					8
e. Dealing with customers/clients or the public is a major source of stress on my job					
f. I have a lot of pressure or responsibility without enough authority to make decisions					
g. My job requires that I do the same thing over and over: the work is repetitious and monotonous					
h. I feel lonely or isolated at work					
i. The people in my work group get along well together					
j. The management treats clerical and office employees with respect and dignity					
k. The management treats minorities and/or older employees with an unfair or discriminatory manner					
l. There is too little supervision or guidance					
m. There is too much supervision or excessive monitoring of my work					
n. My supervisor is angry, hostile or takes things out on me or co-workers					
o. There is an effective procedure for handling problems or grievances					
p. I have an adequate job description which reflects my responsibilities					
q. I am subjected to unpleasant sexual remarks or demands					
r. I am required to run personal errands or do other tasks that are not part of my job description					

II. OFFICE ENVIRONMENT

	Yes (1)	No (2)	For Office Use Only
1. Is your office comfortable?			23
If no, is your office			
a. too crowded			24
b. too noisy			25
c. too cold			26
2. Does the chair you sit on have			
a. adjustable height			27
b. adequate back support			28
c. adjustable back support			29
3. Is the supply of fresh air satisfactory?			31
a. If No, is the air			
1. Too drafty			32
2. Too stagnant			33
b. If No, does the air contain irritating			
1. Fumes			34
2. Dust			35
3. Smoke			36
4. Vapors			37
5. Fibers			38

c. If Yes to any of the above, what is the source of the problem?

4. Is your office are there unsafe working conditions?
If Yes are there any of the following problems?
a. Unsafe equipment
b. electrical hazards such as open wirings
c. fire hazards
d. ruined electrical outlets
e. other (please describe)

5. Do you work around hazardous or toxic chemicals?
If Yes, what effects do they have on you or your coworkers?

III. OFFICE MACHINES

	Yes (1)	No (2)	For Office Use Only
1. Do you work with any of the following machines?			
a. Photocopying/xerox			50
b. Video display terminal, cathode ray tube (VDT/CRT)/ computer terminal word processor			51
c. Duplicating (mimeo, ditto, etc.)			52
d. Keypunch			53
e. Other key entry			54
f. Typewriter			55
g. Other (Please describe)			56
2. In your opinion, do you or any of your co-workers experience any health problems from working with the machines?			57
If Yes, please indicate type(s) of health problems:			
a. Eye irritation			58
b. Headache			59
c. Muscle Strain			60
d. Dizziness			61
e. Nausea			62
f. Blurred vision			63
g. Other (please describe)			64
If you work with a VDT/CRT, word processor or computer terminal, please answer the following questions. If not, please go on to section IV.			
3. What is the brand name and model number of the machine you work with? (...ups from machine or instruction manual)			66-67
4. How long have you operated the VDT? _____ Months			68-69
5. How much of your work time do you spend working at the VDT? (check one)			70
☐ less than 25%			
☐ more than 25% but less than 50%			
☐ more than 50% but less than 75%			
☐ 75% to 100%			
6. When you work on the VDT, what periods of time do you usually spend at the terminal? (check one)			71
☐ Short periods (less than 1 hour) (1)			
☐ Average periods (1-3 hours) (2)			
☐ Long periods at time (3 or more hours) (3)			
7. Overall, do you feel that working with the VDT or word processor makes your job (check one)			72
☐ More interesting (1)			
☐ Makes no difference (2)			
☐ More boring, monotonous (3)			
☐ More stressful (4)			
8. When there are equipment failures or the computer is down, do you feel that (check one)			73
☐ A nice break (1)			
☐ Doesn't really matter (2)			
☐ I get very upset (anger) (3)			
9. When you are working at the VDT how often do you take a break			74-75
Per Hour / Per Day			
☐ 0 times / ☐ 0 times			
☐ 1 time / ☐ 1 time			
☐ 2 times / ☐ 2 times			
☐ 3 times / ☐ 3 times			

	Yes (1)	No (2)	For Office Use Only
9b. On the average, how long are these breaks? (check one)			76
☐ 0-10 min (1)			
☐ 10-20 min (2)			
☐ 20-30 min (3)			
☐ Longer than 30 min (4)			
10. Who decides when you take a break? (check one)			77
☐ myself (1)			
☐ supervisor/company policy (2)			
☐ machine determines (3)			
11. What determines the pace of your work (check one)			78
☐ myself (1)			
☐ supervisor/company policy (2)			
☐ machine determines (3)			
12. Are you required to complete a certain amount of work per hour or per day			79
13. What color is the screen?			1
☐ green (1)			
☐ black (2)			
☐ other (please describe)			
14. What color are the characters?			2
☐ white (1)			
☐ black (2)			
☐ green (3)			
☐ other			
15. Are the characters on the screen			
a. blurred			3
b. Too small			4
c. Other (please describe)			5
16. Does the screen on your VDT flicker			6
☐ Often (1)			
☐ Sometimes (2)			
☐ Never (3)			
17. Are there reflections on your screen			7
18. Does the machine have any of the following features?			
a. brightness adjustment			8
b. hood			9
c. adjustable screen			10
d. separate keyboard			11
e. anti-glare surface			12
19. Does your work station have any of the following features?			
a. foot rest			13
b. arm rest			14
c. vertically adjustable work surface			15
20. Are there blinds or curtains on nearby windows?			16
21. Behind you machine is there a			
a. Wall			17
b. Window			18
c. Nothing			19
If there is a wall, what color is it?			20-21
22. Do you wear glasses, corrective lenses while using the VDT?			22
If yes, are they (choose one)			
☐ regular eyeglasses (1)			23
☐ bifocals (2)			24
☐ contact lenses (3)			25
☐ other (specify) (4)			26
23. Did you wear glasses before you began working with VDT?			27

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IV JOB RELATED HEALTH

	Yes (1)	No (2)	For Office Use Only
1a. In your opinion, is your overall health better, the same or worse than it was before you were employed at your present job? (check one) ☐ better (1) ☐ same (2) ☐ worse (3)			28
b. If better or worse, do you think that your job has something to do with this change?			29

2. How often do you experience any of these health problems? (please check the appropriate box for each health problem)

	Never (0)	Rarely (1-2x/mo)	Sometimes (3-4x/mo)	Often (2-3x/wk)	Every Day	For Office Use Only
a. Eyestrain						
b. Headaches						
c. Nausea/dizziness						
d. Trouble sleeping/insomnia						
e. Muscle strain or pain in your back						
f. Muscle strain or pain in your neck						
g. Muscle strain or pain in your arms						
h. Muscle strain or pain in your shoulders						
i. Exhaustion or severe fatigue at day's end						
j. Stomach or digestive problems/heartburn						
k. Skin rashes/irritations from chemicals						
l. problems from constant noise						
m. Aching wrists or weakness of the hands						
n. Difficulty breathing/tightness in chest						
o. Extreme tension/anxiety/nerves						
p. Periods of irritability/anger						
q. Menstrual irregularities						

	Yes (1)	No (2)	For Office Use Only
13. Does the company provide you with eye exams?			75
If Yes, how often? ☐ every six months (1) ☐ once a year (2) ☐ once every 2 years (3) ☐ less than every two years (4) ☐ other (5)			76

If you work with a VDT, CRT or word processor, answer questions 14-17. If you do not, please go on to section V.

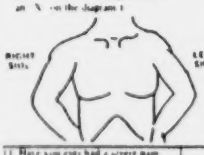
14. Since you began working on the VDT, have you had more frequent eye exams?			77
If Yes, how many times since you began working with the VDT?			78-79
15. Since you began working on the VDT, have you had new lenses prescribed?			80
If yes, how many times?			1-2
16. Have you (or your partner) tried/been trying to get pregnant while working with the VDT?			3
If yes, have you succeeded?			4
17. While using a VDT, have you or your partner had a			
Miscarriage			5
Problem with pregnancy			6
Problem with delivery			7
Baby with birth defects			8
Still born			9
If yes, did the doctor know what caused the problems?			10
If yes, please explain			11

	Yes (1)	No (2)	For Office Use Only
Do you have			
s. Hypertension			47
t. Heart disease			48
u. Ulcer			49
v. Other (please explain)			50
3. Has your doctor ever told you that you had			
a. hypertension or high blood pressure			51
b. heart disease			52
c. ulcer			53
d. arthritis (please note where)			54
e. bursitis (please note where)			55
f. other (please explain)			56
4. Have you ever had any pain or discomfort in your chest			9
5. Have you ever had any pressure or tightness in your chest			10
If you responded yes to either question 4 or 5, please answer the following questions. If you answered no to both 4 and 5, then go on to question 12.			
6. Do you get aches, pain or discomfort, tightness and/or pressure or heaviness in your chest when you walk uphill or hurry?			60
7. Do you get it when you walk at an ordinary pace on the level?			61

8. When you get it in your chest what do you do?
☐ Stop (1)
☐ Slow down (2)
☐ Continue at same pace (3)

	Yes (1)
9. Does it go away when you stand still?	

10. Where does it get this pain or discomfort? (mark the place with an "X" on the diagram)



	Yes (1)
11. Have you ever had a severe pain across the front of your chest lasting half an hour or more?	
12. Since you have been working how often do you go to an eye doctor? ☐ every six months (1) ☐ once a year (2) ☐ once every 2 years (3) ☐ less than every 2 years (4) ☐ other (5)	

V COPING AND SOCIAL SUPPORT

1. We are interested in knowing if the following statements are true of your immediate boss and co-workers in your department. (please check all that apply in both the boss and co-worker categories.)

	Boss (1) Yes	Boss (2) No	Co-Worker (1) Yes	Co-Worker (2) No	For Office Use Only
a. Is a person you can completely trust					12-13
b. Is cooperative					14-15
c. Is a person you can rely upon to carry his/her load					16-17
d. Is a person who appreciates you					18-19
e. Is a person who interferes with you or makes it difficult for you to get your work done					20-21
f. Is a person who generally lets you know how you stand					22-23
g. Is a person who takes personal interest in you					24-25
h. Is a person who generally lets you know what he/she expects from you					26-27

2. Which of the following activities do you presently do, have done in the past or would do in the future when experiencing stress at work? (Assume all these activities are available to you). Check one for each activity.

	Do Now	Have Done In the Past	Would Do In the Future	For Office Use Only
1. Seek assistance of a counselor/therapist				28
2. Seek assistance of a family physician or other health care professional				29
3. Talk to friends/relatives				30
4. Try to cope with it myself				31
5. Talk to a co-worker				32
6. Talk to my supervisor at work				33
7. Seek religious counseling				34
8. Join a support group				35
9. Work it out through my union				36
10. Participate in a stress management workshop or course				37
11. Think about changing to a less stressful job				38
12. Other (Please explain)				39

	For Office Use Only
3. How effective are your current activities to relieve stress? ☐ very effective (1) ☐ somewhat effective (2) ☐ not at all effective (3)	40
4. How stressful would you say your typical day is? (check one) ☐ very stressful (1) ☐ somewhat stressful (2) ☐ rarely stressful (3)	41
5. How stressful would you rate your job overall? ☐ always stressful (1) ☐ sometimes stressful (2) ☐ rarely stressful (3) ☐ never stressful (4)	42

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6. When you are angry, frustrated or anxious, how often are you likely to:

	Never (1)	Some times (2)	Often (3)	Almost Always (4)	For Office Use Only
a. Exercise, walk, jog, dance or meditate					43
b. Involve yourself in a hobby					44
c. Drink alcohol					45
d. Smoke cigarettes					46
e. Use drugs or take medication					47
f. Drink more coffee soft drinks, soda					48
g. Eat more often (overeat)					49
h. Take time to get away from it all					50
i. Try to act as though nothing happened					51
j. Keep feelings to yourself					52
k. Take feelings out on others, blame someone else					53
l. Get it off your chest, blow off steam					54
m. Talk to a friend or relative as soon as you can					55
n. Talk to co-workers					56
o. Take action to prevent the situation from happening again					57
p. other (please describe)					58

VI. JOB AND PERSONAL INFORMATION

Please check or fill in the box that applies to you

	Yes (1)	No (2)	For Office Use Only
1. Age _____ years			6-7
2. Sex ☐ Male ☐ Female			8
3. Ethnicity/Race ☐ Black (1) ☐ American Indian/Alaskan (2) ☐ Asian/Pacific Islander (3) ☐ Hispanic (4) ☐ White, Not Hispanic (5) ☐ Other (6)			9
4. Marital Status ☐ Single (1) ☐ Married (2) ☐ Separated (3) ☐ Divorced (4) ☐ Widowed (5) ☐ Living with Partner (6)			10
5. How many years of education have you completed (count college as 13, 14, etc.)? _____ years			11-12
6a. Do you have any children?			12-13
6b. If Yes, how many children do you have? _____ How many live with you at present?			14-15 16-17
7. Title of Current Job Please describe responsibilities			18-19

	Yes (1)	No (2)	For Office Use Only
8. Number of years at present company _____			20-21
9. Number of years in present position _____			22-23
10. How many hours a week do you work _____			24-25
11. Do you work rotating or split shifts?			26
12. What labor union are you represented by? ☐ CWA (1) ☐ AFGE (2) ☐ Other (3) What is your local number?			28-29
13. Do any of the following issues need improvement in your office? a. pay raises			30
b. benefits			31
c. respect			32
d. job advancement			33
e. job training			34
f. job description			35
g. vacations			36
h. supervision			37
i. other (please explain)			38
14. Please check your yearly income ☐ below $10,000 (1) ☐ $10,000-$15,000 (2) ☐ $15,000-$20,000 (3) ☐ Over $20,000 (4)			39
15. Are you the sole support for your family?			40
16. I would like a copy of the survey results			41
17. I would be willing to answer follow up questions			42

18. If yes to questions 16 or 17 please give your name, address and phone number below. This information will be kept confidential.

Name _____

Address _____

_____ Zip _____

Phone _____
(area code)

Thank you for your cooperation and participation in this study.

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